REMARKS

Claims 1-23 are all the claims pending in the application. Claims 17-22 were previously withdrawn from further consideration.

To summarize the Office Action, claims 1-16 and 23 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hashimoto (U.S. Patent No. 7,001,797) in view of Shimoda *et al.*, U.S. Patent No. 6,887,650 (hereinafter "Shimoda").

The outstanding rejections are traversed, as discussed below.

Claim Rejections - 35 U.S.C. § 103

With respect to the rejection of independent claim 1 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hasihmoto in view Shimoda, Applicant respectfully traverses. As discussed below, Applicant submits that the rejection is improper because the Examiner has failed to establish *prima facie* obviousness.

Claim 1 defines a method for manufacturing a solid-state imaging device by adhering a transparent substrate, in which a plurality of frame-shaped spacers are formed, via an adhesive to a wafer on which plural solid-state imaging elements are formed, and by dividing the transparent substrate and the wafer for each solid-state imaging element, each of the solid-state imaging elements on the wafer being surrounded by each of the plurality of spacers.

The claimed method comprises the operations of, *inter alia*, adhering a transfer member, to which the adhesive is applied, to the plurality of spacers formed on the transparent substrate;

applying pressure to the transparent substrate and the transfer member, which is adhered to the plurality of spacers formed on the transparent substrate; and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate.

In rejecting claim 1, the Examiner alleges that Hashimoto teaches all the features of claim 1 except for the feature of "adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate." *See* Office Action at page 3.

To compensate for this deficiency, the Examiner turns to Shimoda, which is alleged to teach "a similar method of manufacturing a semiconductor device where an [*sic*] peeling layer (adhesive material) is formed on a transfer destination substrate..." *See* Office Action at page 4. As the asserted motivation to combine, the Examiner contends that "a transfer member, as taught by Shimoda, can be included in the formation of the adhesive layer on the spacers." *See* Office Action at page 5.

Further, the Examiner proceeds to allege as follows:

> "In addition, both Hashimoto and Shimoda teach bonding the transparent substrate and a wafer substrate by using spacers that have an adhesive material formed thereon. Therefore, transferring the adhesive on the spacers that includes a transfer member would prove to be equivalent, since the ultimate goal would be to form an adhesive material onto the spacers, for the purpose of later bonding the transparent substrate and the wafer substrate together."

See Office Action at page 5.

Applicant respectfully disagrees and submits that the asserted motivation to combine Shimoda to Hashimoto is unreasonable. Further, Applicant disagrees with the Examiner's characterization of the actual disclosure of Shimoda.

For instance, Hashimoto relates to a method of manufacturing optical devices, such as imaging devices having microlenses, in which the optical lenses are cut apart and diced. *See* Hashimoto at col. 1, lines 12-34. As taught by Hashimoto, a substrate 10 has a plurality of optical elements 60, which respectively include optical sections 14, and each optical section has a plurality of energy transducers 16. *See* Hashimoto at col. 4, lines 4-26 and Fig. 2. Further, Hashimoto teaches that a cover 30, which comprises plate 32 and spacer 34 formed integrally, is provided to seal the optical section 30, such that the spacer 34 is disposed to surround the optical section 14 and support the plate over the optical section 14. *See* Hashimoto at col. 4, lines 47-60 and Fig. 3.

In attaching the cover 30 to the substrate 10, Hashimoto teaches that an adhesive, which is not even shown in Hashimoto's drawings, may be applied to "at least one of the cover 30 (spacer 34) and the substrate 10" in order to seal the optical section 14 prior to separation of the substrate to form individual optical elements 60 by a dicing blade. *See* Hashimoto at col. 5, lines 40-67. According to Hashimoto, since the optical sections 14 are sealed before the substrate 10 is separated, no debris enters the sealed chamber during the cutting process. *See* Hashimoto at col. 6, lines 9-12.

Shimoda, on the other hand, teaches a transfer method for transferring a thin film device between substrates "without it being necessary to carry out a step of dividing (dicing) into chips

or the like." *See* Shimoda at col. 2, lines 40-45. More specifically, Shimoda teaches that, initially, a plurality of "transferred bodies 2a" are formed onto a transfer origin substrate 1, energy is applied to "partial regions" of the transfer origin substrate, and the transferred bodies that correspond to the partial regions exposed to the energy are then transferred onto a "transfer destination substrate 3". *See* Shimoda at col. 13, lines 39-46 and Figs. 1A-1B.

Further, Shimoda teaches that the transferred bodies are devices such as "TFTs, diodes, resistors, inductors, capacitors, or other active or passive devices" that are transferred from the transferred layer 2 when exposed to the energy. *See* Shimoda at col. 13, lines 51-54. Thus, Shimoda's teaching is directed to an alternative of using a conventional "dicing" technique of mechanically separating, or cutting, individual circuit components from a common layer or substrate, in which separation from the substrate can be selectively achieved by exposure of energy to the substrate.

Moreover, the "peeling layer" of Shimoda, which the Examiner apparently makes reference to in the grounds of rejection, simply refers to a layer that absorbs irradiated light, thereby resulting in a reduction of bonding strength and separation of the transferred bodies in the region exposed to radiation. *See* Shimoda at col. 17, lines 42-49. Indeed, Shimoda expressly teaches that, to the extent that any "peeling residue from the peeling layer 11 remains attached to the transferred bodies 12a after transfer onto the second substrate 26 side", it is "preferable to completely remove this peeling residue." *See* Shimoda at col. 42, lines 63-67.

Thus, Applicant submits that Shimoda's teaching of separating transferred bodies from a transfer substrate by selective exposure of radiation to avoid dicing would not have *any*

application to Hashimoto's teaching of manufacturing optical devices, in which a optical lenses are cut apart and diced. Further, Applicant submits that there is no support for the Examiner's contention that Shimoda teaches the use of "spacers" that have an adhesive material formed thereon, which could in any way be construed as equivalent to the spacer 34 of Hashimoto.

As discussed above, Shimoda's teaching is directed to separation of an entire "transferred body", such as a TFT, diode, resistor, or other circuit element, from an initial substrate, not for *transferring adhesive* to a structural element of an imaging device (i.e., spacers), such as claimed in method claim 1. Therefore, Applicant submits that there is no suggestion that Shimoda's teaching could be applied to transfer adhesive, as recited by claim 1, in which adhesive applied to the transfer member is released from the transfer member onto the plurality of spacers formed on the substrate.

As noted previously, since Hashimoto is silent on a transfer member, the Examiner has cited Shimoda to cure this deficiency. However, even assuming that the tape carrier F of Shimoda (Fig. 15) might be considered to correspond to a transfer member, Shimoda clearly states a heat-fusing adhesive is employed (column 34, line 19) in the embodiment (Fig. 14A-15), while a room-temperature activated adhesive is used in accordance with an exemplary embodiment of the claimed invention. *See* Specification at page 13, line 27-page 14, line 2.

Both of the references are silent on the room-temperature activated adhesive. On the other hand, the heat-fusing adhesive is not used in the current application in order to prevent the heat applied to activate the adhesive from warping the members of different thermal expansion rates, i.e. a transparent substrate for shielding alpha-ray and a wafer made of silicon. Shimoda is

silent on the negative influence the warp has upon later dicing process since dicing is not employed in Shimoda.

In addition, Hashimoto is related to an optical device like this invention and it is difficult to heat up the desired portion in such a device of minute structure.

Applicant further points out that since Shimoda transfers electric components such as a TFT or a diode but not an adhesive as pointed out above. Thus, Shimoda belongs to a *different* technical field entirely than that of the present invention and Shimoda is therefore inappropriately cited in the Office Action.

For instance, although Shimoda describes transferring the transferred body 2a by use of adhesive, Shimoda is silent on transferring the adhesive itself *to the spacers*. Moreover, since "the 'peeling layer' should be fanned from a material for which the bonding stone). .. weakens upon the application of the energy" (column 6, lines 27-30), the peeling layer of Shimoda does not correspond to the adhesive layer of claim 1.

Applicant further notes, with regard to Fig. 20A in Shimoda, the temporary adhesive layer 26a is fanned by spin coating, ink jet coating or printing (column 42, lines 38-42) but *not* by transferring the adhesive as in the claimed method. In addition, unlike Shimoda, the solvent-dissolvable adhesive is not used in the method of claim 1.

Although the element 28C in Fig. 20C of Shimoda is an adhesive layer, it has been already cured to adhere the transferred body. On the other hand, the adhesive layer is transferred before cured in accordance with an exemplary embodiment of the claimed method. Moreover, the adhesive layer of Shimoda is applied to the substrate 27 but not to the transferred body 12.

Moreover, the ultimate goal of Shimoda is not "to form an adhesive material onto the spacers" (Office Action page 5) contrary to the Examiner's assertion, but rather to manufacture some device effectively by preparing the substrate onto which the transferred body is transferred. Prather, the detailed explanation of the method of manufacturing the device is not shown in Shimoda, but only the method of transferring the transferred body to the substrate is shown.

With regard to Fig. 14A-15 in Shimoda, although the adhesive tape is used to fix the transferred body, i.e.,. an electric element, the adhesive itself is not transferred. Therefore, assuming the adhesive of the present application corresponds to the transferred body of Shimoda, the objects of the both inventions are completely different from each other. Moreover, unlike this invention, the adhesive of Shimoda is partially cured. Shimoda merely discloses using an adhesive tape, but does not teach or suggest transferring uncured adhesive as in the present invention.

Accordingly, Applicant submits that the Examiner has impermissibly relied on hindsight reconstruction to improperly combine these unrelated teachings. Further, even assuming for the sake of argument that Hashimoto and Shimoda were combined, neither Hashimoto nor Shimoda, whether taken alone or in combination, would reasonably teach or suggest *at least* the feature of "releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate", as in the method defined by claim 1.

Reconsideration and withdrawal of the rejection of claim 1 is therefore requested. As to dependent claims 2-16 and 23, Applicant submits that these claims should be allowable at least by virtue of depending from claim 1, as well as by virtue of the features recited therein.

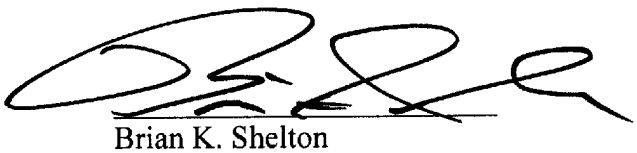
Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

As the due date for filing this Response fell on a Saturday, and as the 19th was a federal holiday, the Response is timely filed on February 20, 2007.

Respectfully submitted,



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